



INFORMATION REGARDING ENVIRONMENTAL AUDIT REPORTS

August 2007

VICTORIA'S AUDIT SYSTEM

An environmental audit system has operated in Victoria since 1989. The *Environment Protection Act 1970* (the Act) provides for the appointment by the Environment Protection Authority (EPA Victoria) of environmental auditors and the conduct of independent, high quality and rigorous environmental audits.

An environmental audit is an assessment of the condition of the environment, or the nature and extent of harm (or risk of harm) posed by an industrial process or activity, waste, substance or noise. Environmental audit reports are prepared by EPA-appointed environmental auditors who are highly qualified and skilled individuals.

Under the Act, the function of an environmental auditor is to conduct environmental audits and prepare environmental audit reports. Where an environmental audit is conducted to determine the condition of a site or its suitability for certain uses, an environmental auditor may issue either a certificate or statement of environmental audit.

A certificate indicates that the auditor is of the opinion that the site is suitable for any beneficial use defined in the Act, whilst a statement indicates that there is some restriction on the use of the site.

Any individual or organisation may engage appointed environmental auditors, who generally operate within the environmental consulting sector, to undertake environmental audits. The EPA administers the environmental audit system and ensures its ongoing integrity by assessing auditor applications and ensuring audits are independent and conducted with regard to guidelines issued by EPA.

AUDIT FILES STRUCTURE

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Report executive summaries, findings and recommendations should be read and relied upon only in the context of the document as a whole, including any appendices and, where applicable, any certificate or statement of environmental audit.

AUDIT REPORT CURRENCY

Audit reports are based on the conditions encountered and information reviewed at the time of preparation and do not represent any changes that may have occurred since the date of completion. As it is not possible for an audit to present all data that could be of interest to all readers, consideration should be made to any appendices or referenced documentation for further information.

When information regarding the condition of a site changes from that at the time an audit report is issued, or where an administrative or computation error is identified, environmental audit reports, certificates and statements may be withdrawn or amended by an environmental auditor. Users are advised to check [EPA's website](#) to ensure the currency of the audit document.

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FURTHER INFORMATION

For more information on Victoria's environmental audit system, visit EPA's website or contact EPA's Environmental Audit Unit.

Web: www.epa.vic.gov.au/envaudit

Email: environmental.audit@epa.vic.gov.au



30 June 2009

ENVIRONMENTAL AUDIT REPORT

Methane Gas Audit: Taylors Road Landfill
890 Taylors Road, Dandenong South, Victoria

Submitted to:

Environment Protection Authority Victoria
Herald and Weekly Times Tower,
40 City Road, SOUTHBANK, VIC, 3006

REPORT



A world of
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2 Copies - EPA Victoria
2 Copies - SITA Environmental Solutions
2 Copies - Golder Associates Pty Ltd





Executive Summary

Mr Roger Parker of Golder Associates Pty Ltd was requested by SITA Environmental Solutions to prepare an Environmental Audit Report under Section 53V of the Environment Protection Act 1970 to assess the risk of any possible harm or detriment of methane gas emissions from the landfill operations located at 890 Taylors Road, Dandenong South, Victoria. The table below provides summary information relating to the Audit and the site.

This report presents the findings of an Environmental Audit into the risk of harm presented by methane gas emissions from the Taylors Road Landfill operated by SITA Environmental Solutions. The Audit has been undertaken in accordance with the scope of work agreed with EPA and has focussed on assessing the risk of harm presented by the emission and possible migration of methane from the landfill site.

The Taylors Road Landfill site has an active landfill gas extraction system operated by Energy Developments Limited with the collected gas pumped to a power generation plant at Berwick.

The results of methane gas monitoring indicated that landfill gas migration beyond the limits of the landfill cells may or may have occurred in limited areas close to the site south, south west and northern boundaries. The south and south west boundary monitoring bores are located adjacent old landfill cells 1 and 2, and since upgrade of the gas extraction system in these cells in November 2008 and December 2008, methane gas concentrations at these locations have been significantly reduced and maintained at acceptable levels.

The monitoring data reviewed to date indicates that methane gas above the EPA investigation trigger level continues to be detected in bores located in the vicinity of Cell 7 along the northern boundary of the site (recent monitoring data indicates methane concentrations generally lower than 5% (i.e. lower than the Lower Explosive Limit for methane)). Methane gas concentrations along the northern site boundary have reduced substantially as a result of upgrading the landfill gas extraction system and installation of a gas cut-off trench in the vicinity of Cell 7.

Given methane concentrations detected along the northern boundary of the site are in excess of the EPA investigation trigger level, it is considered that there is the potential for risk of harm to beneficial uses in this location. The nearest receptors to the northern site boundary are industrial buildings located about 30 m north of the site. Further evaluation, and possibly additional control measures, is required for the northern boundary of the site. Consideration needs to be given to the effectiveness of the existing cut-off trench, the lateral extent of the cut-off trench and measures to ensure that low methane gas concentrations can be maintained at the boundary of the site during periods of system maintenance or shutdown.

Based on the findings of the Environmental Audit, the Auditor concludes:

- a) Methane gas monitoring at the site boundaries is adequate for the detection of potential methane migration off-site.
- b) Methane concentrations > 1 % has been detected in bores in the vicinity of Cell 7. Concentrations have reduced substantially as a result of upgrading landfill gas extraction system and installation of a gas cut-off trench at this location. Risks may be further mitigated through further upgrading of landfill gas extraction / control in the vicinity of Cell 7.
- c) Long-term monitoring has recorded methane gas at the southern and south west boundary of the site above the EPA investigation trigger level. However, this was significantly reduced following the upgrade of the gas extraction system in November/December 2008. This highlights the importance of the gas extraction system in controlling methane emissions from the landfill.
- d) Methane gas above the EPA investigation trigger level has not been detected at the eastern boundary of the site.
- e) Methane gas above the EPA investigation trigger level has not been detected within on-site buildings.



- f) The risks of methane emissions through the cap are likely to be low however at this stage there is insufficient data to confirm emissions through the cap.

The overall risk to air environment posed by methane gas at the site is judged to be low to moderate (in the vicinity of Cell 7). Further evaluation is required to either:

- demonstrate that the current concentrations of methane detected along the northern boundary do not pose an unacceptable level of risk of harm to beneficial uses of the air; or
- improvement of the gas control and management systems will be required to ensure low risk to the environment.

Recommendations

The Auditor has identified a range of measures throughout the Audit Report that are required to be implemented to ensure that the risk of harm posed by methane emissions from the site to the beneficial uses can be reduced and maintained at acceptable levels. These recommendations have been summarised and presented below in order of significance of impact or ease/feasibility of implementation:

HIGH PRIORITY

- Review and evaluation of the gas extraction and control systems in the vicinity of Cell 7. If methane gas risks cannot be confirmed as low and acceptable then further extraction / control of landfill gas migration will be required in this area. Consideration needs to be given to the effectiveness of the existing cut-off trench, the lateral extent of the cut-off trench and measures to ensure that low methane gas concentrations can be maintained at the boundary of the site during periods of system maintenance or shutdown.
- The Landfill Gas Management Plan for the site should document provisions for future installation and/or upgrade of gas extraction at the site (noting that most landfill cells have been constructed and connected to the system) that includes criteria for installation (timely installation), construction of the network, review of performance of the system and repair/modifications as needed.
- All aspects of management, operation and monitoring of the gas extraction system (discussions between SITA and EDL may be necessary to define responsibilities) at the site to be addressed through the Landfill Gas Management Plan, including:
 - Routine planned maintenance of gas extraction system;
 - Management and monitoring of gas collection and extraction bores at the perimeter of the site;
 - Regular review and upgrade (where necessary) of the gas extraction system during the life of the landfill.
- Ongoing weekly monitoring of gas bores (including gas cut-off trench) located in the vicinity of Cell 7 until sufficient data is available to enable reduce the frequency;
- Daily monitoring during and continuing for 3 to 5 days after shutdown of the extraction system. The monitoring should continue after the shutdown if methane is detected in any of the monitoring bores.

MEDIUM PRIORITY

- Revise the Landfill Gas Management Plan as per guidance provided in Section 10.7 of this Audit Report and include provision for:



TAYLORS ROAD LANDFILL METHANE GAS AUDIT

- Ongoing weekly monitoring of methane gas within site buildings for a period of 12 months (or longer if data indicates potential risk of harm to on-site personnel). Based on the results reduction in frequency to monthly may be appropriate;
- Ongoing monthly monitoring of all gas bores until sufficient data is available to enable reduce the frequency further;
- Daily monitoring if methane concentration in any bore is detected at concentrations $> 1\%$ v/v. Daily monitoring of the relevant bore to continue until the concentration drops below the EPA investigation trigger level;
- Once-off daily monitoring for a week in summer and a week in winter;
- Bi-annual (twice per annum) surface gas monitoring in accordance with guidance provided in EPA 722 (sample locations). The frequency of surface emission monitoring could be reduced to yearly following demonstration of that methane emissions are low from three consecutive rounds of monitoring.
- The updated Landfill Gas Management Plan should be reviewed by a person who is an Environmental Auditor.
- Further, this Plan should be reviewed after 12 months with Environmental Auditor confirmation of its adequacy to manage landfill gas risks at and beyond the site.
- Any changes in the Landfill Gas Management Plan that may be required in the future should be reviewed by a person who is an Environmental Auditor.
- A detailed review of the monitoring programme and the Landfill Gas Management Plan should be undertaken every 3 years. It may be appropriate for EPA to require this to be an Environmental Audit in accordance with Section 53V of the Environment Protection Act 1970.



TAYLORS ROAD LANDFILL METHANE GAS AUDIT

Table 1: Summary of Audit Information.

Summary Information Required	Details
EPA File Reference Number	63210-3
Auditor	Roger Parker
Auditor Term of Appointment	03 February 2008 – 02 February 2012
Name of Person Requesting Audit	Mr Michael O' Keeffe
Relationship to Premises/Location	Post Collection Manager, SITA Environmental Solutions
Date of Request	06 January 2009
Date EPA Notified of Audit	19 January 2009
Completion Date of the Audit	30 June 2009
Reason for Audit	Voluntary following discussion with EPA
Description of Activity	Landfill capable of generating methane
EPA Region	South Metro
Dominant – Lot of plan	Lot 1 PS 322846
Additional – Lot of plan(s)	
Site/Premises Name	Taylor's Road Landfill
• Building/Complex Sub-Unit No.	
• Street/Lot – Lower No.	890
• Street/Lot – Upper No.	
• Street Name	Taylor's
• Street Type	Road
• Street Suffix	
• Suburb	Dandenong South
• Postcode	3175
GIS Coordinate of Site Centroid	145.231363
• Longitude/Northing (GD94)	
• Latitude/Easting (GDA94)	-38.043870
Members and Categories of Support Team Utilised	None used
Outcomes of the Audit	The overall risk to air environment posed by methane gas at the site is low to moderate (vicinity of Cell 7) provided that the best practices management and control of gas and gas monitoring at the site continues, and that recommendations and improvement opportunities identified by the Auditor are implemented. Further assessment and / or improvements in the operating systems should result in low risks to the environment being achieved.
Further Work or Requirements	Implementation of Audit recommendations.



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Table 2: Physical Site Information.

Summary Information Required	Details
Groundwater Segment	Segment B
Surrounding Land Use	North: Industrial; South: Undeveloped/agricultural; East: Undeveloped/agricultural; and West: Agricultural/residential.